APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,254	03/10/2004	Mats Oberg	MP0423	5372

44990   7590   06/11/2007

KENYON & KENYON LLP
333 W. SAN CARLOS STREET
SUITE 600
SAN JOSE, CA 95110-2731

EXAMINER
TORRES, JUAN A

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
06/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/797,254	OBERG ET AL.
	Examiner	Art Unit
	Juan A. Torres	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-140* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 22-29, 45-52, 68-75, 91-98, 114-121 and 137-140* is/are rejected.

7)☒ Claim(s) *7-21, 30-44, 53-67, 76-90, 99-113 and 122-136* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because:

a) The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "330" (see figures 7 and 8).

b) The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "120a" regarding figure 5 (see paragraph [0057]).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next

Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

a) The recitation "120a" in paragraph [0057] with reference to figure 5 (see

above) seems to be improper; it is suggested to be changed to "120" (see figure 5);

b) The recitation "320" in paragraph [0075] lines 2, 3 and 6 with reference to

figure 8 (see paragraph [0074]) seems to be improper because reference 320 doesn't

appear in figure 8; it is suggested to be changed to "120" (see figure 5);

The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

Appropriate correction is required.

Claim Objections

Claims 5-8, 28-31, 51-54, 74-77, 97-100 and 120-123 are objected to because of

the following informalities:

As per claims 5-7, 28-30, 51-53, 74-76, 97-99 and 120-122, the recitation "if" is

improper because the use the word "if" render the claim indefiniteness; it is clear what it

happens if the condition is met, but if that condition is not met is indefinite. It is

suggested to change the word "if" to "when".

As per claims 8, 31, 54, 77, 100 and 123 they are objected because they depend

directly or indirectly from claims 5-7, 28-30, 51-53, 74-76, 97-99 and 120-122, and

claims 5-7, 28-30, 51-53, 74-76, 97-99 and 120-122 are objected.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
conditions and requirements of this title.

Claims 116-138 are rejected under 35 U.S.C. 101 because the claimed invention

is directed to non-statutory subject matter.

Claims 116-138 are rejected because they claim data structures not claimed as

embodied in computer-readable media, and data structures not claimed as embodied in

computer-readable media are descriptive material per se and are not statutory because

they are not capable of causing functional change in the computer. See, e.g.,

Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se

held nonstatutory). Such claimed data structures do not define any structural and

functional interrelationships between the data structure and other claimed aspects of the

invention which permit the data structure's functionality to be realized. In contrast, a

claimed computer-readable medium encoded with a data structure defines structural

and functional interrelationships between the data structure and the computer software

and hardware components which permit the data structure's functionality to be realized,

and is thus statutory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 22-29, 45-52, 68-75, 91-98, 114-121, 137-140 are rejected under 35

U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view

of Boyle ("A catastrophic error mode in adaptive predictive DIR equalisation of dynamic

channels" 2001 IEEE Workshop on Signal Processing Systems, 26-28 Sept. 2001

Page(s): 177 – 184).

Regarding claims 1, 47, 93 and 116 AAPA discloses detecting data to produce

early decision outputs; and processing said early decision outputs to produce a

processing output that drives the decision-driven control loop (DDCL) (figure 1

paragraphs [0021]-[0031]). AAPA doesn't disclose first and second early decisions.

Boyle discloses first and second early decisions (Boyle figure 1 page 179 first

paragraph). AAPA and Boyle are analogous art because they are from the same field of

endeavor of digital communications. At the time of the invention, it would have been

obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by

AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing

so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 2, 48 and 94 AAPA and Boyle disclose claims 1, 47 and 93.

Boyle also discloses that the first and second early decision outputs based on memory

paths of differing lengths (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 3, 49 and 95 AAPA and Boyle disclose claims 2, 48 and 94. Boyle also discloses that the memory paths of differing lengths are equal to or less than the length of a full memory path (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 4, 50 and 96 AAPA and Boyle disclose claims 1, 47 and 93. Boyle also discloses comparing the first and second early decision outputs to produce the processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 5, 51 and 97 AAPA and Boyle disclose claims 4, 50 and 96. Boyle also discloses that when the comparison between said first and second early decision outputs indicates no difference, then the first early decision output is used to produce said processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 6, 52 and 98 AAPA and Boyle disclose claims 4, 51 and 96. Boyle also discloses that when the comparison between the first and second early decision outputs indicates a difference, then the second early decision output is used to produce the processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 22, 68 and 114 AAPA and Boyle disclose claims 1, 47 and 93. Boyle also discloses subtracting between the first and second early decision outputs, where the result of the subtraction produces the processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the

same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 23, 69 and 115 AAPA and Boyle disclose claims 1, 47 and 93. AAPA also discloses receiving a loop gain value to produce a gain value output as the processing output (figure 1 paragraphs [0021]-[0031])

Regarding claims 24 and 70 AAPA and Boyle disclose claims 1 and 47. AAPA also discloses and at least one of a variable gain amplifier and an analog-to-digital conversion receiving the processing output (figure 1 paragraphs [0021]-[0031])

Regarding claims 25, 71 and 117 AAPA and Boyle disclose claims 24, 70 and 116. Boyle also discloses that the first and second early decision outputs based on memory paths of differing lengths (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 26, 72 and 118 AAPA and Boyle disclose claims 25, 71 and 117. Boyle also discloses that the memory paths of differing lengths are equal to or less than the length of a full memory path (Boyle figure 1 page 179 first paragraph). AAPA

and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 27, 73 and 119 AAPA and Boyle disclose claims 25, 70 and 117. Boyle also discloses comparing the first and second early decision outputs to produce the processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 28, 74 and 120 AAPA and Boyle disclose claims 27, 73 and 119. Boyle also discloses that when the comparison between said first and second early decision outputs indicates no difference, then the first early decision output is used to produce said processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 29, 75 and 121 AAPA and Boyle disclose claims 27, 74 and 120. Boyle also discloses that when the comparison between the first and second early decision outputs indicates a difference, then the second early decision output is used to produce the processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 45, 91 and 137 AAPA and Boyle disclose claims 24, 70 and 116. Boyle also discloses subtracting between the first and second early decision outputs, where the result of the subtraction produces the processing output (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claims 46, 92 and 138 AAPA and Boyle disclose claims 24, 70 and 116. AAPA also discloses receiving a loop gain value to produce a gain value output as the processing output (figure 1 paragraphs [0021]-[0031]).

Regarding claim 139 AAPA and Boyle disclose claim 1. Boyle also discloses that the first and second early decisions derive from separate data detectors (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Regarding claim 140 AAPA and Boyle disclose claim 24. AAPA also discloses a decision-driven control loop (figure 1 paragraphs [0021]-[0031]). Boyle also discloses that the first and second early decisions derive from separate data detectors (Boyle figure 1 page 179 first paragraph). AAPA and Boyle are analogous art because they are from the same field of endeavor of digital communications. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the DDCL disclosed by AAPA the dual early decisions disclosed by Gupta. The suggestion/motivation for doing so would have been to reduce the error of the system (Boyle page 179 first paragraph).

Allowable Subject Matter

Claims 7-21, 30-44, 53-67, 76-90, 99-113 and 122-136 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a) Bliss (US 6246723 B1) discloses a sampled amplitude read channel that uses early-decisions from a trellis sequence detector to generate estimated sample values for gain control, timing recovery, and equalization;

b) Allen (US 7213196 B2) discloses procedures for indexing a decoder whose output is used for gain control, clock or timing recovery purposes; and

c) Oberg (US 7107514 B1) same assignee of the present Application discloses that a Viterbi decoder identifies errors in an early decision output and includes an early decision generator that generates the early decision output.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is 571-272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres
05-02-2007

TEMESGHEN GHEBRETINSAE
PRIMARY EXAMINER